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RESEARCH AND DEVELOPMENT BRANCH REPORT

Evaluation

of

British Earphones, E5 Amplivox

Serial Number [redacted] 25X1

Submitted by: [redacted] 25X1

Reviewed by: [redacted]
Head, A. & A. Unit

Approved by: [redacted] 25X1
Chief, Electrical Section

[redacted] 25X1
Chief, R & D Branch

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INTRODUCTION.-

The British earphone set described in this report was submitted to the Communications Research and Development Laboratory for tests and evaluation. The headset was tested and inspected for electrical characteristics.

SUMMARY.-

The Amplivox (E5) headset is a single, miniature, magnetic-type earphone complete with cord. The earphone has a soft rubber protrusion which enteres the external auditory canal of the ear and directs the audible signal to the inner ear. The set is held to the ear by means of a flexible metal member shaped to encircle the ear similar to an eyeglass earpiece.

1. Power Requirements.-

1.1. Method of measuring power requirement.-

To draw a conclusion regarding this set, the ANB-H-1 was used as a standard for comparison. A comfortable, nominal, audio level was set and the input power to produce this level for each headset was determined. To determine this power input, the DC resistance and the voltage across each headset was measured. From this, the power was calculated.

S-E-C-R-E-T

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1.1.1. Test Results,-

E5 Amplivox	ANB-H-1
100 microwatts	284 microwatts

2. Impedance Test.-

2.1. Method.-

To ascertain the impedance of this set over a range of frequencies, the headset was connected in series with a 1000 ohm resistance and an audio signal generator. The ground side of a vacuum tube voltmeter was connected to the common point between the resistor and the headset. The other voltmeter lead was used to take voltage readings of both the resistor and the headset at each frequency setting. The impedances were then calculated by:

$$Z_p = \frac{(E_p)\ R}{E_R}$$

where the subscript "p" denotes the headset values and the subscript "R" denotes the resistor values.

The results of this test are shown graphically in Curve 1.

3. Equipment Used.-

Vacuum Tube Voltmeter - General Radio Corporation Type No. 1800-A
Serial Number 803
Audio Signal Generator- Hewlett Packard Model Number 205AG
Serial Number T-910

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4. Conclusions.-

This set compares favorable to American headsets in design and comfort. The set is lightweight and is comfortable when attached to the ear properly. In comparison to conventional headsets, the power requirements are low for nominal power outputs. This Audio output experiences small losses in transmission to the ear by virtue of the protrusion extending into the external auditory canal of the ear.

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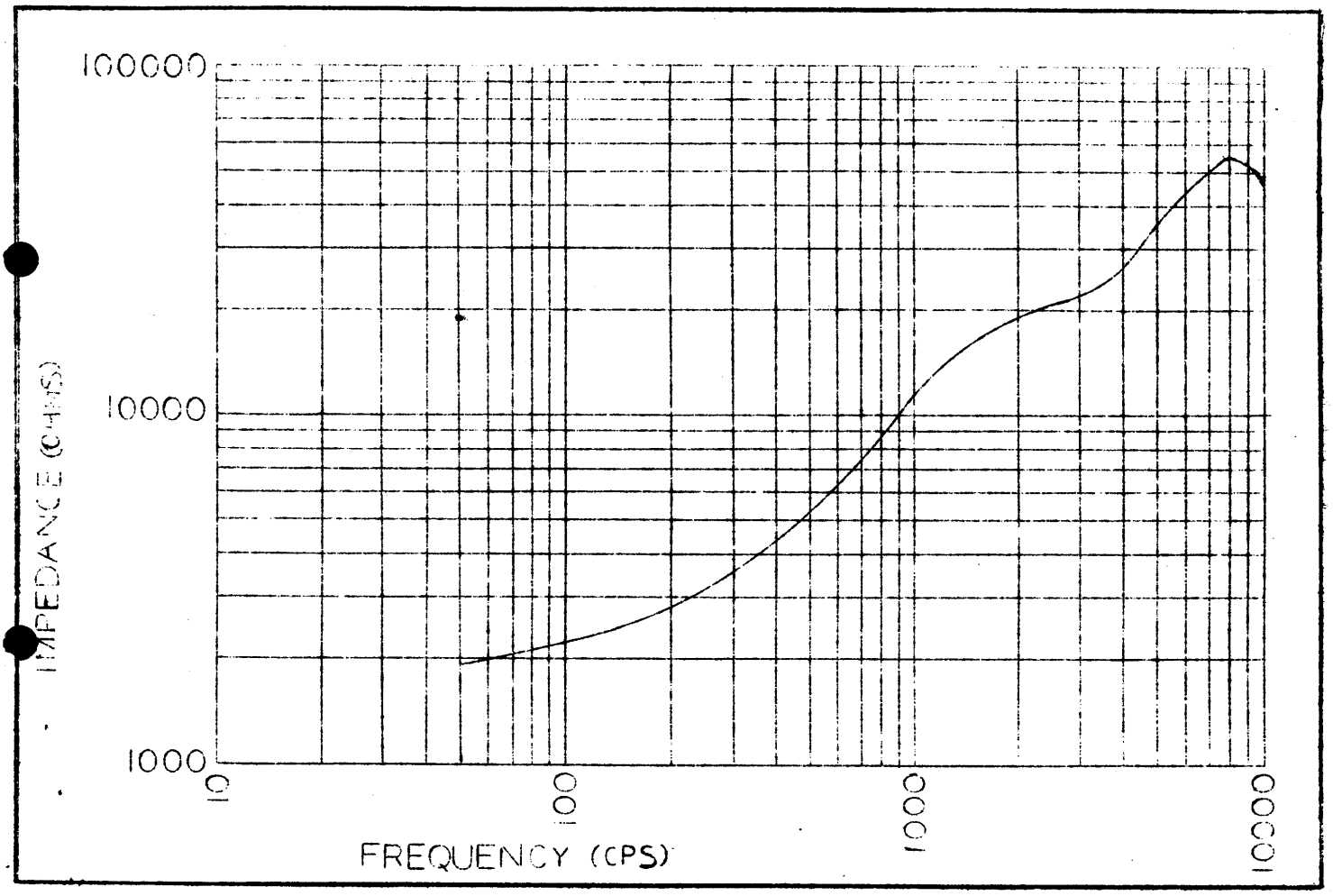

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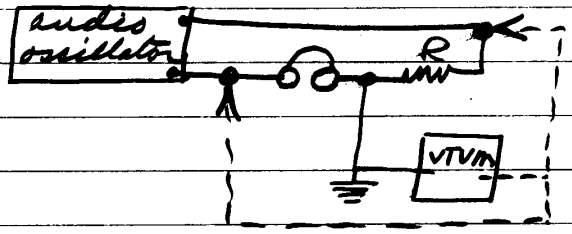
I Impedance vs Frequency (E-5 & Quinn)



$R = 2200\ \Omega$ $\quad Z = \frac{(E_P)R}{E_R}$ subscript "p" denotes headphone values & "R" denotes resistor values

	E-5 Amplifier			Quinn		
f	E_P (v)	E_R (v)	Z_P (Ω)	E_P (v)	E_R (v)	Z_P (Ω)
60	8	4.1	4293	8	2.9	6200
80	8	4.0	4400	8	2.8	6300
100	8	3.9	4573	8	2.6	6800
200	8	3.3	5300	8	2.1	8400
~~300~~	8	2.4	7300	8	1.3	13300
600	8	1.7	10350	8	0.9	19600
800	8	1.4	12570	8	0.86	20500
1000	8	1.2	14660	8	0.7	25000
2000	8	0.95	18525	8	0.4	43000
4000	8	0.47	37445	8	0.22	80000
6000	8	0.3	58665	8	0.14	126000
8000	8	0.26	67690	8	0.11	160000
10000	8	0.21	83800	8	0.093	190000

II Power requirements for nominal audio output

E-5			Quinn		
R	E	P	R	E	P
4125 Ω	0.65V	100 μwatts	5030 Ω	0.68v	138 μwatts

R = dc resistance, E = voltage across phones for nominal audio level.

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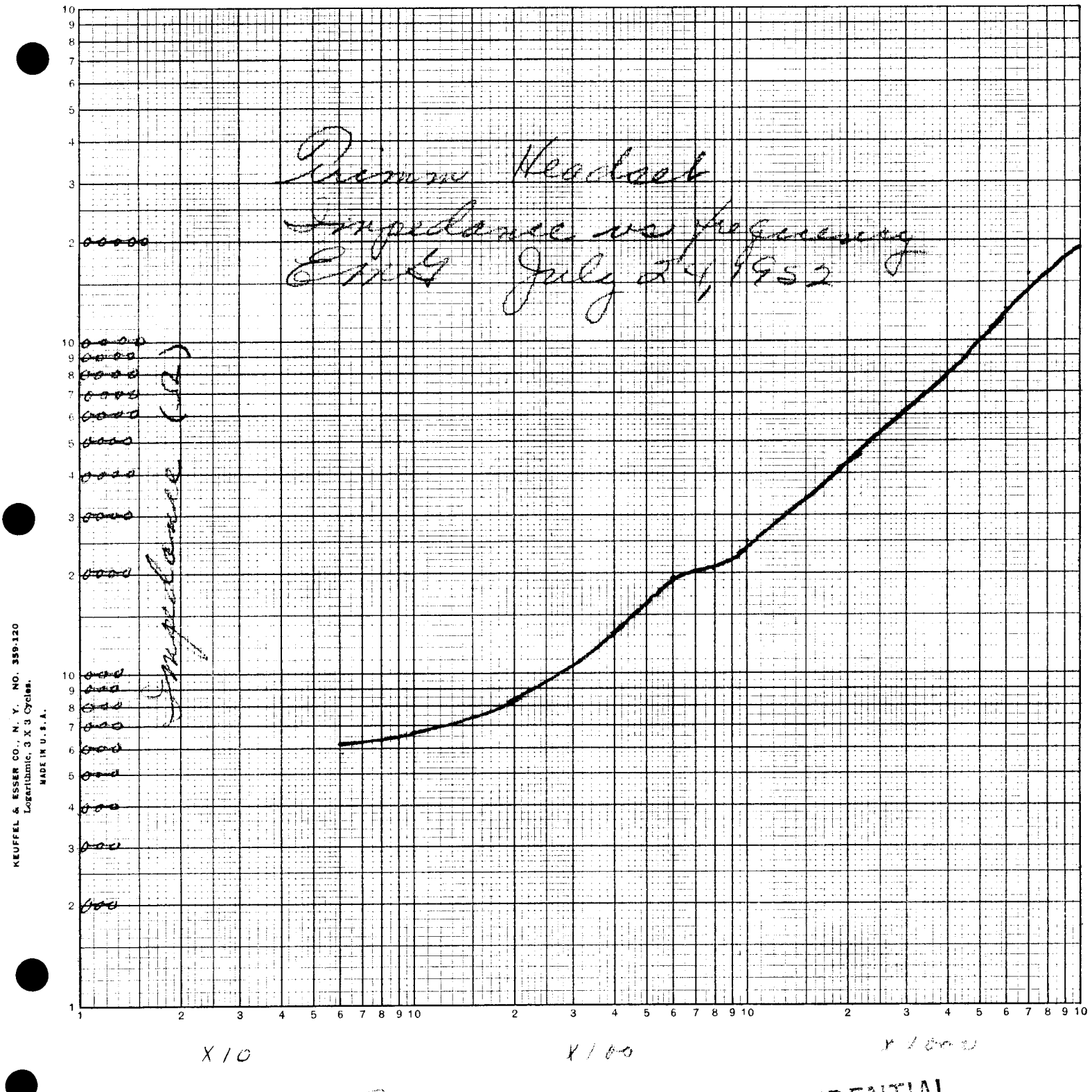

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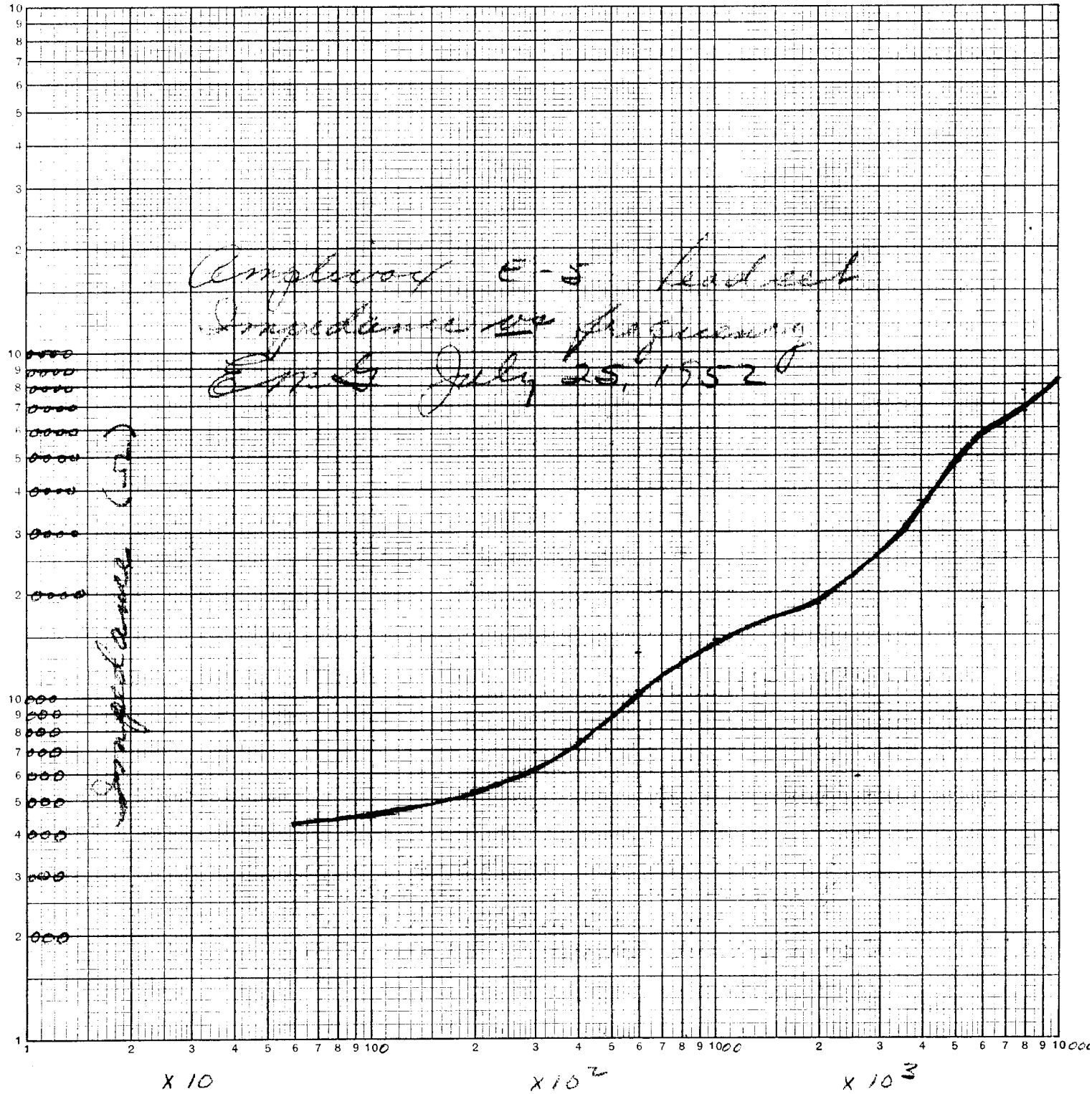

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